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1. A method for treating drinking water comprising:
 - a) providing raw water to a process tank;
 - b) adding an ion-exchange resin to the process tank to form a raw water/ion-exchange resin mixture; and
 - c) removing treated water from the process tank through a membrane filter.
2. The method of claim 1 wherein the ion-exchange resin is a magnetic ion-exchange resin.
3. The method of claim 1 further comprising agitating the raw water/ion-exchange resin mixture sufficiently to maintain the ion-exchange resin in suspension.
4. The method of claim 1 further comprising separating the ion-exchange resin from the raw water/ion-exchange resin mixture.
5. The method of claim 2 further comprising separating the ion-exchange resin from the raw water/ion-exchange resin mixture using a high gradient magnetic filter.
6. The method of claim 5 further comprising regenerating the ion-exchange resin.
7. The method of claim 6 further comprising providing the regenerated ion-exchange resin to the process tank.
8. The method of claim 6 wherein the regenerating step is performed in an external counter current column.
9. The method of claim 6 wherein the regenerating step is performed in the process tank by adding a saline solution to the process tank.

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10. An apparatus for treating drinking water comprising:
a process tank for receiving raw water;
an ion-exchange resin supply operatively associated with the process tank to provide ion-exchange resin to raw water within the process tank; and
5 a membrane filter operatively associated with the process tank for separating particulate matter from treated water removed from the process tank through the membrane filter.

- 10 11. The apparatus of claim 10 further comprising a resin separator operatively associated with the process tank for recovering ion-exchange resin from an ion-exchange resin/raw water mixture.

- 15 12. The apparatus of claim 11 wherein the ion-exchange resin is a magnetic ion-exchange resin and the resin separator is a high gradient magnetic filter.

13. The apparatus of claim 11 further comprising a resin regenerator receiving removed ion-exchange resin from the separator.

- 20 14. The apparatus of claim 13 further comprising means for conveying regenerated ion-exchange resin from the resin regenerator to the ion-exchange resin supply.

- 25 15. The apparatus of claim 13 wherein the resin regenerator is an external counter current column using a saline solution to regenerate the ion-exchange resin.

16. The apparatus of claim 10 further comprising an aerator in the process tank for agitating an ion-exchange resin/raw water mixture in the process tank.

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